# SMALL DRAINAGE STRUCTURES

## Small Drainage Structures

## **Pipe Culverts**

#### Archeological/Historic Preservation

During the environmental document preparation phase, the proposed right-of-way is examined for archeological and historical resources. An archeological records check, an archeological reconnaissance, and sometimes archeological excavation, if necessary, are conducted for the project area. Previously undisturbed existing and proposed right-of-ways are usually included in the archaeological reconnaissance. The findings of the archeological work and historical data are included in environmental documents, which are included in the construction document package. Despite these precautions, on rare occasions, artifacts are discovered during construction. Construction crews and project engineers should be alert to the presence of:

- properties 50 years old or older,
- archeological artifacts (such as bones, stone tools including arrowheads, pottery),
- features (such as shell or charcoal concentrations, foundations, etc.), and
- human remains.

If artifacts, features, or remains are uncovered during the placement of pipe culverts, state law requires that the work stop in the area of the discovery, and that the discovery be reported to the Division of Historic Preservation and Archaeology, IDNR, within 2 working days. First notify the Division of Operations Support and the Environmental Assessment Section of INDOT of the finding, then report the discovery to IDNR at (317) 232-1646, FAX (317) 232-8036. Do not allow anyone to collect artifacts from the discovery except the appropriate IDNR or INDOT archaeological staff. The archaeological staff will delineate the limits of the work stoppage. Work on the remainder of the project can proceed as normal. If the discovery is of sufficient importance, IDNR may wish to properly excavate the area and have it guarded. If this occurs, contact the Division of Operations Support and the EA Section for guidance.

See Archeological and Historic Section in the Laws and Regulations Section for further information.

#### Army Corps of Engineers Section 404/Section 10 Permits (U.S.)

Excavation and/or discharges of dredged or fill materials in waters of the United States below ordinary high water elevation on each bank requires a U.S. Army Corps of Engineer's Section 404 Permit prior to the commencement of construction. Section 404 of the Clean Water Act requires a permit for filling and grading work, mechanized land clearing, ditching or other excavation activity and piling installation. A Section 10 Permit is required for the obstruction or alteration of navigable waters of the U.S. This authority is based on the Rivers and Harbors Act

and regulates work riverward or below the ordinary high water elevation of a navigable stream. Navigable waters of the U.S. are those waterways that are now used, have been used in the past, or may be used in the future to transport interstate or foreign commerce. Note that waterways that are navigable waters under the Rivers and Harbors Act are not necessarily the same as navigable waterways as defined by Indiana's Flood Control Act. Engineer Form 4345, *Application for a Department of Army Permit* is used to apply for these permits. Only one application is required should both permits be required. The Corps will issue the appropriate permit and/or letter of permission (Section 10 or Section 404) needed for the activity.

For the Section 404 permit in non-tidal waters, the limits of jurisdiction are as follows:

- 1. No wetlands\* present jurisdiction is between the limit of the ordinary high water elevation on each bank.
- 2. When adjacent wetlands are present the jurisdiction extends beyond the ordinary high water mark to the limits of the adjacent wetlands.
- 3. When only wetlands are present, the limits of jurisdiction extend to the limits of the wetlands.

Waters of the United States include rivers, streams, creeks, intermittent tributaries, natural ponds, prairie potholes, impoundments, lakes and wetlands. They do not include land that was converted from wetland to cropland prior to December 23, 1985, nor do they include waste treatment systems such as treatment ponds or lagoons designed to meet the requirement of the Clean Water Act.

INDOT is responsible for the proper disposal of items taken from our right-of-way, especially if it is to be placed within waters of the United States, including wetlands. This is true whether the items are placed on INDOT right-of-way, INDOT property or on private property. The project engineer/ supervisor should ensure that a permit has been obtained, if one is required, prior to approving such disposal.

The Section 404/Section 10 Permit only covers those activities detailed by the plans and the conditions of the permit. If an activity is not shown either on the plans or in the permit conditions themselves, then these activities are not allowed if they occur in the waters of the United States. For example, the placement of fill located within waters of the United States that is not specifically shown on the plans should not be allowed to occur. This is especially true for wetlands areas. Read the permit. It tells you what you can and cannot do. If an activity is not specifically allowed in the permit or shown in the plans, and the contractor wishes to conduct this activity, then it is the responsibility of the contractor to obtain a permit or modification of the permit for the activity. The Corps will consider modification of the terms and conditions of the permit if requested to do so. If it is mutually agreed to do so, the Corps of Engineers will give the permittee written notice of the modification, which will become effective on the date established by the Corps of Engineers.

The permit often contains conditions. Conditions of the permits may include items such as the following:

- no impacts to jurisdictional wetlands
- no removal of vegetation beyond the construction limits
- no in stream work between April 1 and June 30

These conditions carry the force of law, and must be adhered to. They must be understood and complied with. They are currently being included in the letting package. The permit **must** be posted at the construction site. It is the project engineer's responsibility to be familiar with these conditions, and comply with them at all times. If there are conditions that

you cannot feasibly comply with, contact the Division of Operations Support for assistance. Do not ignore any conditions. Remember, if you have one permit for an activity, you are not exempted from obtaining all required permits for the same work. Make sure you have obtained all other required permits.

\* 'Wetlands' here means jurisdictional wetlands. A jurisdictional wetlands is an area that has undergone the process of identification and delineation as laid out in the January 1987 Final Report by the Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, and found to be consistent with the wetlands requirements of the manual.

See Army Corps of Engineers Section 404/Section 10 Permit (U.S.) in the Laws and Regulations Section.

#### Construction in a Floodway

Work within the channel of a river or stream is generally the most heavily scrutinized by IDNR when reviewing applications. Except for the construction of dams, dikes, or levees, work in floodways along rivers and streams where the drainage area is less than 1 square mile, requires no Construction in a Floodway Permit.

No hydraulic modeling need accompany the permit application for the repair or replacement of culverts, pipes, and drainage structures which are located within the floodway. but out of the river channel, and were in place before 1973, as long as they are replaced "in kind". You must be able to "prove" that the drainage feature was in place prior to 1973 (dated plans or aerial photos will serve) and show that the road profile will not be raised by the work unless the top of the roadway is above the 100 year flood elevation.

Culverts are considered bridges for the purpose of determining if a project falls under the Construction in a Floodway permit exemption for certain bridge projects.

#### **Bridge Exemption**

Generally, any activity which disturbs soil or sediments within the floodway, and does not meet the requirements of the bridge exemption, requires a permit from IDNR. The Flood Control Act contains an exemption for certain bridge projects involving the construction or reconstruction of a state or county highway department bridge. In order for a bridge project to be exempt from obtaining a Construction in a Floodway permit, the following criteria must be met:

- The project must be a state or county highway department project; 1
  - The project must be a bridge (IDNR considers a culvert to be a bridge) project; 2.
  - The project must be located in a rural area. A rural area is defined 3. as an area where:
    - The lowest floor elevation (including basement) of Α. any residential, commercial, or industrial building impacted by the project is at least 2 feet above the 100 year flood elevation with the project in place;
    - The project is located outside the corporate В. boundaries of a consolidated or an incorporated city or town; and

- C. The project is located outside of the territorial authority for comprehensive planning (generally a 2 mile buffer around a city or town).
- 4. The project must cross a stream having an upstream drainage area of less than 50 square miles.

All four criteria must be met in order for a project to be eligible for the exemption. If the pipe culvert project does not qualify for the exemption, then a Construction in a Floodway Permit, and work occurs in the floodway, a permit must be obtained. This exemption only applies to the Flood Control Act. If a pipe culvert is to be constructed over a navigable waterway, or over or near a public freshwater lake, a permit will be required.

If a permit is required for this activity, make sure that all conditions of the permit are complied with. Conditions of the permits may include items such as the following:

- no impacts to jurisdictional wetlands
- no in channel work from April 1 to June 30
- no frequent fording of live streams

These conditions carry the force of law, and must be adhered to. They must be understood and complied with. They are currently being included in the letting package. The permit must be posted at the construction site. It is the project engineer's responsibility to be familiar with these conditions, and comply with them at all times. If there are conditions that you cannot feasibly comply with, contact the Division of Operations Support for assistance. Do not ignore any conditions. Remember, if you have one permit for an activity, you are not exempted from obtaining all required permits for the same work. Make sure you have obtained all other required permits.

See Construction in a Floodway Section of the Laws and Regulations Section for more information.

#### County Health Departments/State Department of Health

Contractors often discover connections between residential/commercial sewage disposal systems and storm water drainage within the INDOT right-of-way when they are replacing small drainage structures. Residential and commercial sewage disposal systems are required to meet state regulations which prohibit the discharge of sewage (includes dilute sewage effluent) into surface or ground waters of the state, or into any type of drainage that is not considered part of the residential sewage disposal system. This includes all surface drainage, storm drains and field tiles. Residential or commercial sewage disposal systems must be inspected and approved by a local County Health Department official before they can be utilized. Public/commercial wastewater disposal systems require the approval of the Indiana State Department of Health. Contact the Division of Operations Support when illegal connections are discovered within INDOT right-of-way.

See the County/State Department of Health Laws and Regulations Section for more detailed information.

#### Ditch Reconstruction

Any person proposing to undertake activities affecting ditches or drains within 2 mile of a public fresh water lake, where the bottom elevation of the ditch would be lower than the legal

or average water level of the lake must obtain a permit from the Indiana Department of Natural Resources. A public freshwater lake is a **naturally occurring** body of water with **public access provided by the property owner**. Most public freshwater lakes are located in the northern part of the state. The term "Public Freshwater Lake" does **not** include Lake Michigan, lakes within the city of Hammond, borrow pits, sinkholes, or privately owned water bodies associated with surface coal mining.

See the Ditch Reconstruction Section of the Laws and Regulations Section for detailed information.

#### **Endangered Species**

Some of the endangered species in Indiana are the Bald Eagle, Indiana/gray bat, Northern (Blind) Cave fish, and various species of mussels. The environmental document and the permit (Construction in a Floodway Permit issued by the Department of Natural Resources, Division of Water, under the Flood Control Act, IC 14-28-1) which is included in the contract documents, should mention any endangered species in the area and the protective measures that are required to ensure that no impact is made to either the life forms or their habitat.

Time constraints may be placed on the clearing of right-of-way (specifically large trees with loose bark) to protect the bats. The time constraints must be adhered to. If a construction project is scheduled to start at the beginning of these time constraints and INDOT has clear title to the property, it might be wise to send INDOT personnel out to fell all large trees prior to this time period (April 15 to September 15). If previously unknown endangered species are found at a project site, contact the Division of Operations Support immediately at (317) 234-0409 for assistance.

See the Endangered Species Section of the Laws and Regulations Section for detailed information (State Endangered Species Act IC 14-22-34).

#### In stream Blasting Permit

Indiana Fish and Wildlife Code requires that a permit be procured from the Indiana Department of Natural Resources prior to setting, using or discharging dynamite or other explosive in any waters of the State.

See the In stream Blasting Permit Section of the Laws and Regulations Section for detailed information.

#### <u>Karst</u>

Karst landscapes are usually formed on limestone from the surface and subsurface removal of rock mass by dissolution of calcite or dolomite. This forms irregularities on the land surface. Karst areas normally have caves that developed as a result of dissolution along joints, bedding planes, or other openings. As ground water dissolves subsurface limestone, cave systems enlarge and eventually the overburden will cause roofs of caves to collapse creating, on the surface, a bowl shaped land feature called a **sink hole.** Sink holes are direct conduits to

ground water. Because the dissolution along the joints and bedding planes, ground water can travel extremely fast relative to ground water in other types of aquifers. Adsorption to aquifer material, biological uptake, and microbial activity are a few processes to reduce ground water pollution. However, in a karst region ground water flows through joints and along bedding planes much like water flows through pipes in our homes. This fast flow rate does not allow adsorption, microbial activity, or uptake processes to remove pollution from the ground water before it is pump from the ground by a landowner.

Karst features exist in an area of southern Indiana. This area ranges from 10-50 miles wide and stretches from Crawfordsville to the Ohio River (see attached map). Much attention has been given by INDOT in the planning, design, and construction of road projects in the karst area. There are, however, certain responsibilities assigned to maintenance activities. INDOT has entered into a **Memorandum of Understanding** (attached) with other agencies in an effort to learn more about karst features and to regulate certain activities in those areas. Included in this Memorandum of Understanding is a commitment from INDOT, Indiana Department of Natural Resources, Indiana Department of Environmental Management, and the U.S. Fish and Wildlife Service to determine the location of sinkholes, caves, underground streams, and other related Karst features and their relationship prior to proposed alterations or construction in karst regions of the State.

Roadways typically have runoff such as salt and unknown spills that pollute soils near the road. In karst terrain, construction activities may cause soil releases to ground water via nearby sink holes. Excess silt introduced into a sink hole may seal a fissure system effectively removing means of draining the roadway. A wide range of toxic contaminants adhere to soils and may be liberated when soils are introduced into water. Contractors are required to have an erosion control plan, however, timely implementation of the plans are very important in the karst terrain. Maintenance of heavy machinery, such as oil changes, should be done in a designated area which should not be near the sinkhole. After adverse weather conditions, check erosion control measures for damage. The use of peat and other types of filters and wide grassy areas to catch and clean contaminants are some methods currently being used by INDOT to protect the groundwater. Likewise a project in a karst area might include the construction of detention and/or retention basins. Regular inspections should be scheduled to ensure minimum and satisfactory compliance with the Memorandum of Understanding.

The construction of small drainage structures is an activity that may endanger the ground water quality in karst regions. It is important therefore, that you are aware of potential environmental impacts that could occur if construction activities were conducted in the usual manner. In addition to the possible lethal effects on wildlife, contamination of ground water used for drinking water could occur. Regular inspections should be scheduled to ensure minimum and satisfactory compliance with the Memorandum of Understanding. Any sinkhole modification may result in the need for an EPA Injection Well Permit. The Environmental Assessment Section in the Pre-Engineering and Environment Division should be contacted in this event or to answer any question concerning karst area activities.

The Memorandum of Understanding states that prior to acceptance of the final design plans an agreement will be developed which will set out the appropriate and practicable measures to offset unavoidable impacts to karst features. This agreement will be signed by the Department Director of Indiana Department of Natural Resources (IDNR), the Commissioner of the Indiana Department of Environmental Management (IDEM), the commissioner of INDOT, and the Supervisor of the U.S. Fish and Wildlife Service (USFWS) Bloomington, Indiana field office. The agreement will become a part

of the contract documents for the project, will be discussed at the pre-construction conference and will be on file at the office of the project administrator. INDOT will assure that the terms of the agreement will be completed with all safeguards given to the karst area. Special provisions, which are binding provisions that are a part of the contract, will be included outlining the precautions to be taken. Constructions and design strategies for handling karst features will be discussed with the contractor(s) and project administrator during the pre-construction conference. Project administrator shall ensure that the contractor is following the new erosion control standards that meet rule 5 of 327 IAC 15 and any special precautions outlined in the design plans that the sinkhole treatment is being handled correctly. The erosion control plan must be available at the project administrator's office. An emergency response plan will be made a part of the contract documents. In addition, the contract documents will contain a strategy for signing to alert the public to the fact that all types of spills are potentially hazardous to the karst environment. For INDOT, this plan would be procedure 20 of the field operations manual dated 6/24/92.

See the Karst Section of the Laws and Regulations Section for further information.

#### **Lake Preservation Act (Permit)**

The Lake Preservation Act mandates that any person proposing to perform an activity such as small drainage structure work at or lakeward of the legal shoreline or average normal water level (mark) of a public freshwater lake must obtain written approval of the Indiana Department of Natural Resources prior to initiating the activity. A public freshwater lake is a **naturally occurring** body of water with **public access provided by the property owner**. Most public freshwater lakes are located in the northern part of the state. The term "Public Freshwater Lake" does **not** include Lake Michigan, lakes within the city of Hammond, borrow pits, sinkholes, or privately owned water bodies associated with surface coal mining.

See the Lake Preservation Act Section of the Laws and Regulations Section for further information.

#### Navigable Waterway Permit

A Navigable Waterway permit is required from IDNR when working below the ordinary high water mark within the floodplain of a navigable waterway. This includes any activity which disturbs sediments below the high water mark, including the placement of pipe culverts, fill, excavation of material, or withdrawal of water from a navigable waterway. A list of navigable waterways is included in the Laws and Regulations Section under Navigable Waterway Permit. An IDNR Construction in a Floodway Permit can also serve as a Navigable Waterway Permit. However, exemption from the Construction in a Floodway Permit does not exempt you from obtaining a Navigable Waterway Permit.

See the Navigable Waterway Permit Section of the Laws and Regulations Section for further information.

#### Rule 5 - Erosion Control

The requirements of Rule 5 apply to projects, which disturb 1 acre or more of total land area. Projects that result in the disturbance of less than 1 acre, but are part of a larger common plan of development or sale are also subject to Rule 5. If the project falls under neither of these categories, then Rule 5 does not apply. However, erosion control practices should still be utilized at the site regardless of the land area that is disturbed. Often erosion control measures are conditions of Construction in a Floodway, U.S. Army Corps Section 404 Permits, and Section 401 Water Quality Certifications.

For INDOT projects, an erosion control plan is developed during the design phase. This plan, after being filed and reviewed by the appropriated Soil and Water Conservation District (if it falls under the jurisdiction of Rule 5) is incorporated into the plans and is included in the contract documents. If the project falls under the jurisdiction of Rule 5, INDOT also prepares and submits to IDEM the Notice of Intent. Since construction activity cannot begin until the Notice of Intent is filed, the project engineer/supervisor should notify the contractor of such filing.

It is the responsibility of the project engineer to ensure that the contractor has properly implemented and maintained the erosion control plan. Both INDOT and the contractor should continually monitor the erosion control measures to determine if they are working, or if they need maintenance. Steps should be taken to change the plan if it is not effective. Frequent temporary seeding can be one of your most effective tools in controlling erosion. Contact the local representative of the appropriate Soil and Water Conservation District for assistance in developing more effective erosion control measures. They are excellent resource people for either the contractor or the project engineer/supervisor.

A local Soil and Water Conservation District representative, or representative from IDEM or IDNR may visit the site during the construction period to determine the effectiveness of the erosion control plan. Cooperate with these representatives to ensure that the erosion control measures that are being used are the most effective for the job.

See the Rule 5-erosion control regulations section for detailed information.

#### Section 401 Water Quality Certification

Excavation and/or discharges of dredged or fill materials in waters of the United States below the ordinary high water elevation on each bank requires a U.S. Army Corps of Engineer's Section 404 Permit and possibly a Section 401 Water Quality Certification prior to the commencement of construction. For non-tidal waters, the limits of jurisdiction are as follows:

- 1. No wetlands present jurisdiction is between the limit of the ordinary high water elevation on each bank.
- 2. When adjacent wetlands are present the jurisdiction extends beyond the ordinary high water mark to the limits of the adjacent wetlands.
- 3. When only wetlands are present, the limits of jurisdiction extend to the limits of the wetlands.

Waters of the United States, generally speaking, include rivers, streams, creeks, intermittent tributaries, natural ponds, prairie potholes, impoundments, lakes and wetlands.

The Section 401 Water Quality Certification is the state's certification to the U.S. Army Corps of Engineers that the project complies with the state's water quality standards. The Indiana Department of Environmental Management (IDEM) is responsible for the Section 401 Water Quality Certificate review process in Indiana. Read the permit. It tells you what you can and cannot do. As with the U.S. Army Corps of Engineers Section 404 Permit and the Construction in a Floodway Permit, the Section 401 Water Quality Certification covers only those activities shown on the plans or specifically listed in the permit. No other activity is allowed in the water of the U.S. such as clearing or filling areas not shown on the plans. Should the contractor wish to conduct such activity, then it is contractor's responsibility to contact the IDNR to obtain a waiver of the permit. The Section 401 Water Quality Certificate often contains conditions. Typically these conditions might include items such as:

- no vegetation removal beyond construction limits
- no in stream work between April 1 through June 30
- install and maintain erosion control features

These conditions carry the force of law, and must be adhered to. They must be understood and complied with. They are currently being included in the letting package, and also should be posted at the construction site at all times. It is the project engineer's responsibility to be familiar with these conditions, and comply with them. If there are conditions that you cannot feasibly comply with, contact the Division of Operations Support for assistance. Do not ignore any conditions. Remember, if you have one permit for an activity, you are not exempted from obtaining all other required permits for the same work. Make sure you have obtained all required permits.

See the Section 401 Water Quality Certification Section of the Laws and Regulations Section for further information.

#### Solid Waste Disposal

The disposal of uncontaminated dirt, rocks, bricks, concrete and road demolition waste materials are not subject to the solid waste regulations. These wastes may be disposed of on INDOT property or in a certified Municipal Solid Waste Landfill (MSWLF). If the material is to be disposed of on INDOT property the Project Engineer shall be notified. The material shall be placed in an area where construction activity will not occur. Disposal of the waste materials on private property will require written notification from the property owner. Necessary arrangements shall be made with the owner for obtaining a suitable disposal location.

See the Solid Waste Disposal Section of the Laws and Regulations Section for further information.

#### Spill Response

Hazardous material releases, oil spills, fish/animal kills and radiological incidents must be reported to Office of Emergency Response, IDEM immediately (888) 233-7745. This should occur as soon as action has been taken to either contain/control the extent of the release, or protect persons, animals or fish from harm or further harm. Appropriate response actions for spills occurring on project sites, in order:

- 1. Identify the spilled material from a safe distance,
- 2. Contain the spilled material or block/restrict its flow using absorbent booms/ pillows, dirt, sand or by other available means,
- 3. Cordon off the area of the spill,
- 4. Deny entry to the cordoned off area to all but response personnel, and
- 5. Contact OER/IDEM then Operations Support.

See the Spill Response Section of the Laws and Regulations Section for further information.

## **Tile Drains**

#### County Health Departments/State Department of Health

Connections are often made between privately owned field tile drains and sewage disposal systems. Unless the tile drain is considered part of the sewage disposal system by the local health department or the State Department of Health, then it is an illegal connection. Generally, no portion of a residential or commercial sewage disposal system or its associated drainage system may be constructed on property other than that from which the sewage originates. If sewage appears to be emptying into INDOT right-of-way from a field tile or drainage tile, then contact the Division of Operations Support.

See the County Health Department/State Department of Health Laws and Regulations section for more detailed information.

## **Sewers**

#### Karst

Karst landscapes are usually formed on limestone from the surface and subsurface removal of rock mass by dissolution of calcite or dolomite. This forms irregularities on the land surface. Karst areas normally have caves that developed as a result of dissolution along joints, bedding planes, or other openings. As ground water dissolves subsurface limestone, cave systems enlarge and eventually the overburden will cause roofs of caves to collapse creating, on the surface, a bowl shaped land feature called a **sink hole.** Sink holes are direct conduits to ground water. Because the dissolution along the joints and bedding planes, ground water can travel extremely fast relative to ground water in other types of aquifers. Adsorption to aquifer material, biological uptake, and microbial activity are a few processes to reduce ground water pollution. However, in a karst region ground water flows through joints and along bedding planes much like water flows through pipes in our homes. This fast flow rate does not allow adsorption, microbial activity, or uptake processes to remove pollution from the ground water before it is pump from the ground by a landowner.

Karst features exist in an area of southern Indiana. This area ranges from 10-50 miles wide and stretches from Crawfordsville to the Ohio River (see attached map). Much attention has been given by INDOT in the planning, design, and construction of road projects in the karst

area. There are, however, certain responsibilities assigned to maintenance activities. INDOT has entered into a **Memorandum of Understanding** (attached) with other agencies in an effort to learn more about karst features and to regulate certain activities in those areas. Included in this Memorandum of Understanding is a commitment from INDOT, Indiana Department of Natural Resources, Indiana Department of Environmental Management, and the U.S. Fish and Wildlife Service to determine the location of sinkholes, caves, underground streams, and other related Karst features and their relationship prior to proposed alterations or construction in karst regions of the State.

Roadways typically have runoff such as salt and unknown spills that pollute soils near the road. In karst terrain, construction activities may cause soil releases to ground water via nearby sink holes. Excess silt introduced into a sink hole may seal a fissure system effectively removing means of draining the roadway. A wide range of toxic contaminants adhere to soils and may be liberated when soils are introduced into water. Contractors are required to have an erosion control plan, however, timely implementation of the plans are very important in the karst terrain. Maintenance of heavy machinery, such as oil changes, should be done in a designated area which should not be near the sinkhole. After adverse weather conditions, check erosion control measures for damage. Whenever possible, storm water runoff from the roadway should be directed through storm water sewers rather than sinkholes. Runoff from roadways may endanger the ground water quality in karst regions. Be aware of potential adverse environmental impacts such as wildlife kills and contamination of ground water used for drinking water.

The Memorandum of Understanding states that prior to acceptance of the final design plans an agreement will be developed which will set out the appropriate and practicable measures to offset unavoidable impacts to karst features. This agreement will be signed by the Department Director of Indiana Department of Natural Resources (IDNR), the Commissioner of the Indiana Department of Environmental Management (IDEM), the commissioner of INDOT, and the Supervisor of the U.S. Fish and Wildlife Service (USFWS) Bloomington, Indiana field office. The agreement will become a part of the contract documents for the project, will be discussed at the pre-construction conference and will be on file at the office of the project administrator. INDOT will assure that the terms of the agreement will be completed with all safeguards given to the karst area. Special provisions, which are binding provisions that are a part of the contract, will be included outlining the precautions to be taken. Constructions and design strategies for handling karst features will be discussed with the contractor(s) and project administrator during the pre-construction conference. Project administrator shall ensure that the contractor is following the new erosion control standards that meet rule 5 of 327 IAC 15 and any special precautions outlined in the design plans that the sinkhole treatment is being handled correctly. The erosion control plan must be available at the project administrator's office. An emergency response plan will be made a part of the contract documents. In addition, the contract documents will contain a strategy for signing to alert the public to the fact that all types of spills are potentially hazardous to the karst environment. For INDOT, this plan would be procedure 20 of the field operations manual dated 6/24/92.

See the Karst Section of the Laws and Regulations Section for further information.

#### **NPDES Permits**

A NPDES Permit is required for **direct** (point source) **discharges** of regulated pollutants **only**. This includes discharges from sewage treatment plants, truck wash facilities, and vehicle/equipment maintenance garages.

See the NPDES permit regulations section for more detailed information.

#### **Sole Source Aquifers**

A sole source aquifer is an area's only source of drinking water. In Indiana, the sole source aquifer of concern is located mainly in St. Joseph and Elkhart counties. A confined aquifer is one where a protecting clay layer severely retards surface water from migrating into and contaminating the ground water. An unconfined aquifer is open to contamination from the infiltration of surface water. In St. Joseph and Elkhart counties, most of the aquifer is unconfined and subject to contamination from a variety of activities.

Due to the fact that in all instances, the survey party cannot determine the exact location and elevation of existing sewers, utilities, and other underground installations, it is imperative that the Project Engineer/Supervisor make such investigations as may be necessary to determine such locations prior to establishing lines and grades for new sewer installation.

A Memorandum between the Federal Highway Administration (FHWA), Region 5 and the U.S. Environmental Protection Agency (EPA), Region 5 states that FHWA agrees not to commit Federal financial assistance to any project which EPA determines may contaminate a sole source aquifer through its recharge zone so as to create a significant hazard to public health. The requirements of this agreement apply to any Federal Aid highway project determined to be wholly or in part within a sole source aquifer designated area and to which one or more of the following criteria apply:

- (1) Construction of additional through-traffic lanes or interchanges, on existing roadways.
- (2) Construction of a two or more lane highway on new alignment.
- (3) Construction of rest area or scenic overlooks with on-site sewerage disposal facilities.
- (4) Any project involving a new or existing well within a designated sole source aquifer area.
- (5) Any other project that FHWA, in consultation with EPA, believes may have a potential to affect the designated aquifer through its recharge zone so as to create a significant hazard to public health.

See the Sole Source Aquifer Section of the Laws and Regulations Section for further information.

### **Structure Removal**

#### Solid Waste Disposal

The disposal of uncontaminated rocks, bricks, concrete, road demolition waste material, or dirt is not subject to the solid waste regulations. These materials may be disposed of on INDOT property or a sanitary landfill. Disposal on INDOT property requires permission from the Project Engineer. The material shall be disposed in a location where construction activities will not occur. Construction/demolition sites may accept concrete, stone, lumber, and other items, which are affixed to the structure being constructed or demolished, except regulated asbestos containing material.

See the Solid Waste regulations for detailed information.